REMARKS/ARGUMENTS

The office action of March 25, 2003 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested. Claims 1-24 remain in this application. New claims 25-27 have been added.

Claims 1-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 5,059,815 to Bill et al. ("Bill"). Applicant respectfully traverses this rejection.

The action alleges that Bill discloses all the elements of independent claims 1, 11 and 21, but for a first capacitor having one end which is connected to the output node, and another end which receives a first oscillation signal. To overcome this deficiency, the action contends that Bill's abstract "teaches that a number [of] charge pump circuits may be cascaded to form a multi-stage charge pump circuit" and that it would have been obvious to "cascade [the] plurality of charge pump circuits [of] Fig. 3 for the purpose of forming a multi-stage charge pump circuit." Further the action alleges that node D in the second charge pump circuit, which cascaded to first charge pump circuit [in] Fig. 3, is the output node [as claimed], and capacitor C4 of the second stage having one end which is connected to the output node, and another end which receives a first oscillation signal" is the first capacitor as claimed.

Contrary to the action's assertion, applicant submits that one skilled in the art would not have modified Fig. 3 of Bill as set forth in the action to obtain the inventions recited in claims 1, 11 and 21. Importantly, Bill's abstract merely indicates that the number of units provided between the Vpp and output node can be changed *without* any teaching or suggestion of changing the location of the output node. Therefore, to form a multi-stage charge pump circuit including more than two stages (the action's reasoning for modifying Bill) would not have involved making node D the output node. Indeed, what would have resulted if Bill were modified to cascade the charge pump circuits would have been a multi-stage charge pump circuit including a third stage having a pumping MOS capacitor (similar to C1), series capacitor (similar to C3), voltage clamp (similar to M1) and MOSFET diode (similar to 350) at the output of MOSFET diode 360 with the pump output node being at the output of the third stage MOSFET diode. This resulting structure however, would not have included a first capacitor having one end which is connected to the output node, and another end which receives a first oscillation signal as

called for in independent claims 1, 11 and 21. In addition, if the structure of Fig. 3 were modified to make node D an output node as the action avers, the circuit of Bill's Fig. 3 including capacitor C4 would not have function as desired. In any event, there is no motivation, incentive or suggestion to modify Bill in such a manner.

Applicant has recognized certain advantages according to an illustrative embodiment of the claimed invention, such as in Fig. 13 of the instant application, by connecting one end of a capacitor to an output node. When one end of capacitor C5 is connected to output node N3, and the output level of inverter I8 reaches "H", node N2 can reach its highest electrical potential by capacitive coupling. As a result, the page potential of transistor QN1 is much higher than the page potential in a circuit without capacitor C5. Thus, the VPP can be transferred to the Vout without the threshold level dropping (refer to Fig. 2).

In light of the foregoing, one would not have modified Bill in the manner set forth in action to obtain the invention of claims 1, 11 and 21. For at least this reason, independent claims 1, 11 and 21 and their corresponding dependent claims, 2-9, 12-20 and 22-24, respectively, are patentably distinct from Bill.

New claims 25-27 are fully supported by the specification and are considered allowable over the art of record for the same reasons as their respective base claim, and further in view of the novel features recited therein. For example, Bill lacks a teaching or suggestion of a threshold voltage of the second transistor being lower than a threshold voltage of the first transistor.

CONCLUSION

It is believed that no fee is required for this submission. If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

All rejections having been addressed, applicant respectfully submits that the instant application is in condition for allowance, and respectfully solicit prompt notification of the same.

Respectfully submitted,

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